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ABSTRACT

A computer-assisted instructional system has been implemented in 21 elementary schools in Chicago. The system runs on a UNIVAC 418-III computer which processes concurrently the reading, language arts, and mathematics drill and practice strand programs of the Computer Curriculum Corporation. All students participating qualified under the Elementary and Secondary Education Act Title I guidelines for compensatory education and all were achieving at least one year below grade level upon entering the program. Results of the project after the first year showed it to have been highly successful. Individualized instruction was provided, and teachers were freed from drill activities for more creative work. Most importantly, students showed gains to nearly one month for each month in the program, a figure substantially better than the national average for compensatory education students, which stood at 5.6 months for every 8 months of instruction. As a consequence, further expansion of the program to 11 new schools was planned for the following year. (PB)

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CAI IN CHICAGO

George H. Litman

Chicago City Schools

INTRODUCTION

In September, 1971 the Board of Education of the City of Chicago implemented a drill-and-practice Computer-Assisted Instruction program in seven selected elementary schools. The system consists of a UNIVAC 418-III computer processing concurrently the reading, language arts, and mathematics drill and practice strand programs of Computer Curriculum Corporation. This system is now operating in 21 elementary schools; each school is equipped with 15 CRT student terminals and 1 printer terminal for producing class reports. The total network therefore consists of 336 on-line terminals plus 3 terminals used for demonstration purposes.

Since each student session has a duration of 10 minutes we are providing approximately 8500 students sessions a day. These students all qualify under ESEA Title I guidelines and all are achieving at least one year below grade level before entering the program.

To understand the analysis of data collected during the first year and a half of CAI operation, you must understand the strand approach that is used in the 3 curricula. For example the mathematics curriculum is divided into 14 skill areas called strands. (Figure 1) Each strand is a sequence of related items arranged in order of increasing difficulty. A student receives a mixture of problems from all strands active at his average achievement level. For example a student whose average achievement level is 3.2 receives problems from strands 1 and 9 and does not receive problems from strands 10-14. The software keeps 'score' of the student's performance in each strand and moves him, based on specific criteria, to a higher or lower achievement level in each strand independent of his performance in other strands. This approach allows each student to move at his own pace through each of the strands independent of other students.

RESULTS FROM CAI CURRICULUM

The teacher initially places the student in the curriculum based upon the student's previous test scores and school performance. Then each day for ten successive days that initial placement is raised or lowered by 5 months (one half year) based on the student's session performance until base data is established at the end of this period.

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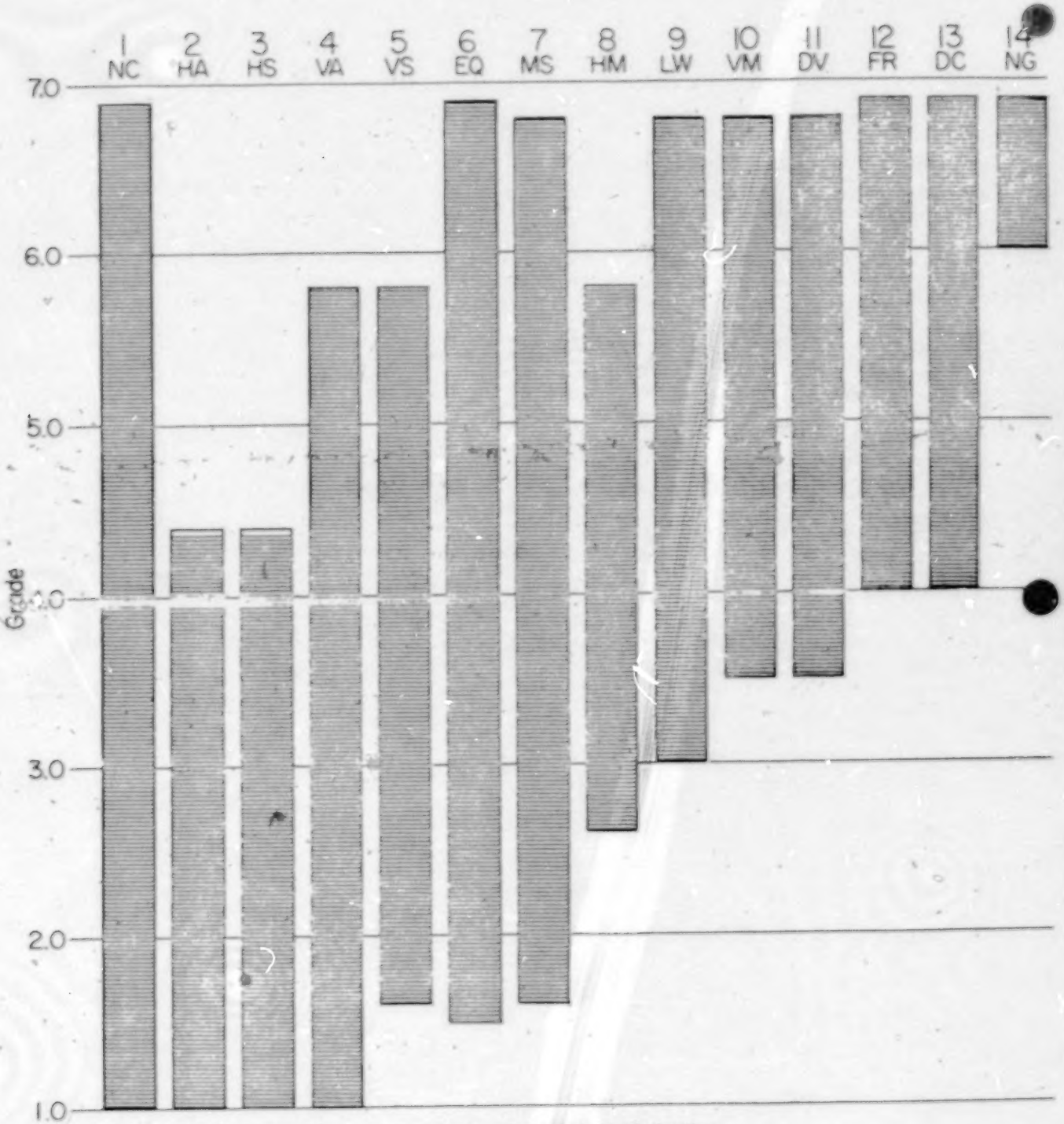
MATH STRAND DISTRIBUTION



NC....Number Concepts
HA....Horizontal Addition
HS....Horizontal Subtraction
VA....Vertical Addition
VS....Vertical Subtraction
EQ....Equations
MS....Measurement
HM....Horizontal Multiplication
LW....Laws Of Arithmetic
VM....Vertical Multiplication
DV....Division
FR....Fractions
DC....Decimals
NG....Negative Numbers

The following results were observed:

1) Pupils made gains across all of the strands.

2) Almost all pupils gained at least one month grade equivalent for each month in the program.

3) Between 90 and 100% of the students showed a gain in grade equivalent during the program.

4) Especially high gains can be noticed for students who completed more than 100 sessions.

5) Greater gains were made in the language arts and mathematics curricula than in the reading program.

RESULTS FROM STANDARDIZED TESTS

Achievement by pupils on the Metropolitan reading test also shows that CAI was successful. The average gain in the sample population of 477 students was 6 months during a pretest to posttest period of 7 months even though CAI students averaged only 74 ten minute sessions during that period. The average gain for the national compensatory population is 5.6 months over an 8 month pretest to posttest period, while in Chicago the average gain among all Title I eligible students is even lower. I feel confident this year (1973) that CAI pupils will establish larger standardized gains since they will complete a greater number of terminal sessions during the pretest to posttest period.

CONCLUSIONS

During the first year of implementation in Chicago, CAI has achieved considerable success by highly individualizing part of the instructional process. Drill and practice CAI frees the teacher for the more creative aspects of instruction. Pupil progress on standardized tests and on CAI programmed instructional material indicates that Title I eligible students can achieve success at the 'normal' rate of one month gain for each month in the program. The Department of Systems Analysis and Data Processing of the Board of Education is looking forward to implementing another kind of CAI involving 'tutorial' curriculum, but the present system has been so successful that a further expansion to 11 new schools is planned for the coming school year.